postel

Network Working Group
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SMTP on X.25

1. Status of this Memo

This memo proposes a standard for SMTP on the virtual circuit facility provided by the X.25 standard of the CCITT.

Distribution of this memo is unlimited.

2. Introduction

The possibility of using the X.25 virtual circuit (ISO level 3) directly for SMTP is mentioned in RFC 821 ("SIMPLE MAIL TRANSPORT PROTOCOL"), in appendix D. It suggests that "a reliable end-to-end protocol such as TCP be used on top of X.25 connections". This was undoubtedly true considering the general reliability of the PSDNs at the time (1981). The service is now (in 1989) reliable enough to allow practical direct use of the virtual circuit service.

The procedures given here have proven to be successful in extensive production use, involving 24 PSDNs in 22 different countries. The resulting service is economical even using some of the more expensive PSDNs. Operation over private X.25 connections and X.25 LANs has also proven successful.

An X.25 virtual circuit (VC) is opened for each SMTP session. The full duplex channel provided by the VC is used for the session. The VC is then closed, normally by the calling side.

3. Protocol ID and Call User Data

The first four octets (bytes) of the Call User Data Field, which are commonly used as a protocol identifier, or PRID, should be (hex) C0F70000. (In decimal, 192 247 0 0.)

Implementations should, however, provide the ability to configure the call user data on a per-address basis, including the protocol ID field.

4. Data stream

The SMTP data is divided into (streamed into) packets in any way the sending side prefers. Sequences with the M bit (more data) set are

encouraged, and may be up to 2048 bytes in total length.

It is recommended that SMTP commands and responses be sent as single packets, or single more-data sequences, if only to facilitate debugging the protocol. This is not a requirement.

5. Qualified data

Packets with the Q bit set and interrupt packets are not used, and should be ignored if received.

6. Circuit resets

If a level 3 circuit reset is received, the VC should be cleared, and the SMTP connection attempted again. The retry may be after some delay, and may be with different call facilities.

7. Call facilities

Any negotiable features selected by the X.25 call request facilities field may be used. Implementations should provide the ability to specify facilities for each called address.

8. Character code

The character code used on X.25 is the full ASCII-8 code, with no escapes or modifications. Lines are terminated by CRLF (13 10 decimal). Implementations should, if possible, recognize lines terminated only by LF (10 decimal).

9. Closing the connection

Unlike TCP, X.25 does not provide for synchronous delivery of data in transit when a clear request is in progress; any packets in transit are discarded when the VC is cleared. Therefore, on X.25, the SMTP session layer is closed by the calling side when the Service Closing message is received, either in response to a QUIT command, or because the service must shut down.

10. Timeouts

SMTP does not normally provide for timing out a session. On X.25, the following has proven to be effective:

10.1. call request

If a call accept is not received within 100 seconds, or the Service Ready message is not received within (another) 120

seconds, the call should be cleared and retried later.

10.2. established

After the protocol session is established, the circuit should be cleared if no response is received for 10 minutes.

10.3. closing

After the QUIT command is issued, the timeout should be shortened to 20 seconds. This will sometimes cause an ungraceful exit, but this will not affect the SMTP transactions already completed.

10.4. clearing

When the X.25 Clear Request packet has been sent, the VC should be timed out in accordance with the X.25 protocol specification.

11. Other features

Other features of X.25, such as permanent virtual circuits and D bit selection, are not used.

References

[1] Postel, J., "Simple Mail Transfer Protocol", RFC 821, USC Information Sciences Institute, August 1982.

[2] CCITT Recommendation X.25, "Interface Between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Terminals Operating in the Packet Mode and Connected to Public Data Networks by Dedicated Circuit", International Telegraph and Telephone Consultative Committee, Fascicle VIII.3, Geneva, 1976; amended at Geneva, 1980 and Malaga-Torremolinos, 1984. ("Red Book")

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